AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows:

Please replace the title with the following replacement title:

~~METHOD OF~~ RECORDING MARK FORMATION IN A PHASE CHANGE MEMORY MATERIAL VIA A PREDOMINATELY CAPACITIVE COOLING PROCESS

Please replace the paragraph beginning on line 8 of page 3 with the following replacement paragraph:

Although the write strategy of Kudo may be theoretically possible, the write strategy described therein has been found to be impractical because a host of problems arise when writing the type of marks shown therein. For example, the trailing edge of the marks tends to have limited definition due to the significant amount of mark recrystallization. This is evident in the planar XY as well as in the cross-sectional XZ directions. The limited definition of this edge in turn limits the jitter of the recorded signal. As a result of this "soft" edge, mark-edge detection as a read-back strategy suffers. This reliance poses additional problems in the real world, where ~~were~~ the reflectivity of even a virgin track (i.e., containing no marks) often varies cyclically around the disk (i.e., as it rotates) due to the variability often caused by focus and tracking problems typically associated with disk warping.

Please replace the paragraph beginning on line 6 of page 5 with the following replacement paragraph:

In accordance with another aspect of the present invention there is provided a multilevel recording strategy. In a multilevel recording strategy, marks provide more than 2 recording levels. In a multilevel recording strategy, each of the marks can be formed using a plurality of energy pulses. In one embodiment, the pulse characteristics are chosen so as to permit ~~at least~~ at least 50% capacitive cooling. In another embodiment, the pulses are chosen to have relatively short pulse widths (i.e., preferably below about 14 nanoseconds). In a preferred aspect hereof, the multilevel recording device has a plurality of predetermined data cells of uniform dimension where each mark formed is provided entirely within a corresponding data cell. The mark may be written in such a way as to avoid altering or significantly altering marks of other data cells. In another preferred aspect hereof, mark recording levels are differentiated by mark width while keeping mark length essentially constant.

Please insert the following new paragraph after the paragraph beginning on line 11 of page 6:

Fig. 3 is a schematic depiction of mark formation in accordance with the present invention.

Please replace the paragraph beginning on line 9 of page 14 with the following replacement paragraph:

Referring now to Fig. 1, generally depicted therein at 10 is a plan view of an optical disk with an exploded view 14 taken at 12 of a partially recorded track 34. The track ~~tract~~ 34 is divided into a plurality of predetermined data cells 16, 18, 20, 22, 24, 26 of uniform dimension (as shown by the dotted lines which are depicted for illustration purposes only). The track 34 is recorded with a plurality of marks 28, 30, 32, the marks formed for multilevel recording having multiple recording levels to allow for more than 2 bits of information. The marks are written to the track ~~tract~~ 34 using the methods of the present invention using an energy source 8 that provides energy pulses 6, as described in detail herein above and below. The recording level of each mark is differentiated by the areal or volume fraction of the crystalline/amorphous states per data cell. The marks 28, 30, 32 are amorphous and provide three different levels of reflectivity. As shown, the recording levels are determined by mark width W while mark length L is kept constant between marks. Thus, a data cell having a mark with a narrower width, such as mark 32, will have a relatively higher reflectivity value than data cell 20 having a wider mark, such as mark 28.

Please replace the paragraph beginning on line 1 of page 15 with the following replacement paragraph:

Mark shaping using the method of the present invention can also be used to limit the amount of recrystallization of the mark itself. This mark 'self' recrystallization can occur when the local region surrounding a mark is over-heated to the extent that conductive cooling dominates mark ~~marks~~ cooling (i.e. >50%). Over-heating results in a relatively long cooling time. The extended cooling time allows a mark, which has been formed to be

amorphous, to significantly recrystallize. Self recrystallization may result in substantial mark size shrinking. In some circumstances, the mark size may be reduced by 1% or more, but can be as high as 10%, 50%, or even as much as 100%. By using mark shaping in accordance with one or more aspects of the present invention, marks can not only be written without significant self recrystallizing but can be written without altering other marks, such as those of adjacent data cells and can also be used to dramatically improve mark edge detection. Additionally, by avoiding significant self recrystallization, marks can be written in a continuous fashion along data cells, e.g. marks completely filling the length of a corresponding data cell.

Please insert the following new paragraph between the paragraph beginning on line 1 of page 30 and the paragraph beginning on line 7 of page 30:

Referring now to Fig. 3, there is shown the application of energy 210 having a spatial profile 215 to an optical recording medium comprising a phase change material 205. The spatial profile 215 defines a region of spatial overlap 220 of the energy 210 with the optical recording medium 205. The energy 210 provides a temperature profile 230 within the region of spatial overlap 220, where the temperature profile 230 defines a spatial distribution of temperatures 240 within the region of spatial overlap 220. The spatial distribution 240 includes a range of temperatures 250 that are sufficiently high to permit formation of an amorphous phase in the region of spatial overlap 220. The range of temperatures 250 coincides with the region of mark formation 260, where the mark 280 comprises an amorphous phase and forms upon the cooling of the region of spatial overlap 220. In accordance with the instant invention, the cooling is accompanied by a release of excess energy from the region of mark formation 260 to surrounding region 265 that

occurs at a rate sufficient to prevent the formation of an amorphous phase in surrounding region 265, thereby preserving the boundaries of the region of mark formation during cooling and providing a mark 280 having boundaries that coincide with those of mark formation region 260.